Development and validation of a new instrument to measure nursing students compassion strengths: The Bolton Compassion Strengths Indicators.

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Abstract

Despite considerable research and rhetoric on the importance of compassion in nursing, progress has been hindered by the lack of an adequate psychometric instrument to measure its multidimensional nature. This paper reports several studies conducted over three stages, to develop and validate a new instrument to measure nurses' compassion strengths. A purposive sample of UK pre-registered nursing students studying at a University took part in this study. The eight indicators highlight the multidimensional nature of compassion. The Bolton Compassion Strengths Indicators (BCSIs) demonstrated robust psychometric properties and could provide the means by which nursing students can empower themselves, as they strive to develop their professional identity as compassionate practitioners. This new measure will also help other researchers and educators who wish to study the development of compassion strengths in nursing.

Key words: Compassion strengths, Nursing students, Instrument validation, Wellbeing

Introduction

The importance of measuring compassion is a pressing challenge for nursing (Sturgeon, 2010; Johnson, 2008). Psychometric scales are essential for evaluating nursing research and practice, especially as they can assess different subjective states (Streiner & Kottner, 2014). Burnell and Agan (2013), argue that despite the importance of empirical research, nursing lacks a standardised scale for measuring compassionate care. The scarcity of instruments may have stemmed from the ongoing arguments based on whether compassion can be measured empirically, or if one should even attempt to measure it at all (Flynn & Mercer, 2013). Ford (2009) suggests that this may be due to the complexity surrounding the reliability of such a measure. Nurses usually provide compassionate care out of the view of, and often unnoticed by others, thus making compassion difficult to measure (Sturgeon, 2010). Adding to this is the argument that compassion is an inherent concept that either one possesses or does not (Bray et al., 2014; Curtis, 2013), and therefore is too subjective to be measured. However, if there was a tool that could measure the compassionate actions and behaviours that demonstrate compassion in nurses, it may also help them become more aware of and ultimately improve their ability to deliver better quality care. As Mooney (2004) advises, it is one thing to claim compassion as a nursing value, but another to fully comprehend it and measure its effect on practice. Equally, Dewar (2011), claims that there are very few means of measuring compassion in nursing effectively.

The lack of measures for compassion poses both a challenge and an opportunity for nursing. Educational and practice organisations benefit from identifying nurses and nursing students who either have or exhibit the potential to become compassionate nurses (Davidson & Williams, 2009). Pitt et al (2014) highlight the dearth of quantitative tools to measure the personal qualities in nursing students and whether these change during their education. Indicators create the tools by which care providers become accountable for the quality of nursing care they provide (Griffiths et al, 2008). Crucially, before a suitable measure for compassion in nursing is developed, the consequences of creating a tool that indicates if an individual has or does not have what is regarded as a fundamental human attribute, should be considered. Without careful deliberation of this, there is a risk that such a scale could be used against nurses to criticise them for not being compassionate and may lead to some being refused entry onto a nursing programme (Davidson & Williams, 2009).

To render compassion and expected behaviours explicit, Tierney et al (2016) suggest measurement could develop understanding to improve patient care, whilst reflecting that they are working in a compassionate way, and how work-related stress can impact on a practitioner's compassion. Bradshaw (2009), and Nijboer & Van der Cingel (2019), argue that it is through individual values, characteristics, actions and

behaviours evidence a nurse's compassionate character. Yet without a standard tool to measure this, staff and patients usually rely on their interpretation of compassionate behaviour. Indicators are incorporated in tools used by care providers to demonstrate accountable nursing care (Griffiths et al., 2008). Therefore, by having a standardised set of measurable indicators for compassion, both staff and patients know what to look for and what to expect from themselves and others.

Research on compassion in nursing shows there are a lack of psychometric instruments available (Davison & Williams 2009). Reasons for this include a lack of detailed identification or examination of compassion skills and behaviours (Papadopuolus & Ali., 2016; Shantz, 2007: Von Diets & Orb, 2000) among nurses and key stakeholders. Furthermore, ways of promoting self-care in nursing for nurses to sustain their compassionate care (Mills et al., 2015, 2018), lack relevant measures. Thus, a nursing compassion measure should consider how and in what ways nurses demonstrate compassionate care, and what they currently do to protect themselves from stress.

Despite the emphasis on a measure of compassion, a review of the literature revealed no evidence for a validated UK measure of nurse's compassion, or for that matter nursing students (Durkin et al., 2018). Previous scales that have been developed for nursing include the Compassionate Care Assessment Tool (Burnell & Agan, 2013), Confidence in Providing Calm, Compassionate Care Scale (CCCS) (Kemper et al., 2015), Compassion Scale (Kret, 2011), and the Compassion Competence Scale (CCS) (Lee & Seomun, 2016), see table 1. While these measure interesting and important questions related to compassion, the studies are limited in their assessment and ability to capture the comprehensive range of compassionate behaviours in nursing. In consideration of this, we developed the Bolton Compassion Strength Indicators, as an instrument for measuring compassion based on the *a priori* Compassion Strengths Model (Durkin et al., 2019). This theoretical model was developed with service users, registered nurses, nursing students, and nurse educators.

This paper forms part of a series taken from one authors' doctoral studies (M.D.). The first was a literature review on the characteristics of a compassionate nurse, how it is taught and measured in nursing. Eleven characteristics were associated with a compassionate nurse. A further qualitative focus group and interview study with key stakeholders identified eight characteristics named as 'strengths' leading to naming the Compassion Strengths Model. Using the model, this paper reports on the development and validation of a scale to measure nursing students compassion strengths. This was used to asses students learning and development in an online compassion course.

Table1. Characteristics of studies developing a measure for compassion in nursing

Reference	Instrument	Measurement domains	Versions of measure developed	Number of items	Study population	Sample size	Psychometric properties assessed
Burnell, L. & Agan, D.L. (2013) (USA)	Compassionate Care Assessment Tool	• Meaningful connection • Patient expectations • Caring attributes • Capable practitioner	Self-report patients	28 Likert scale	Hospitalised patients	250	Face validity Exploratory Factor analysis Internal reliability
Kemper et al., (2015) (USA)	Confidence in Providing Calm, Compassionate Care Scale (CCCS)	• Compassion confidence	Self-report Clinicians	10 Likert scale	Registered Nurses who were part of a wider study of healthcare staff	30	Face validity Internal reliability Convergent validity
Kret, D.D. (2011) (USA)	Compassion Scale	• Cold/warmth • Unpleasant/pleasant • Distant/compassionate • Insensitive/sensitive • Uncaring/caring	Self-report Patients/Nurses	5 Likert scale	Nurses/medical patients	100	Face validity Internal reliability
Lee, Y., & Seomun, G.A. (2016) (Korea)	Compassion Competence Scale (CCS)	• Communication • Sensitivity • Insight	Self-report Nurses	17 Likert scale	Registered Nurses	660	Item analysis Exploratory factor analysis Convergent validity Internal consistency

Aim

Due to the shortage of comprehensive instruments, the aim of this research was to develop and validate a set of measurable indicators of nursing students' compassion.

Methods

The BCSI was developed in three phases:

Phase one: items were generated, and their validity assessed.

Phase two: the scale was constructed, tested and revised.

Phase three: Scale evaluation and testing its dimensionality, reliability and validity (Boateng et al., 2018).

Participants

A total of 421 pre-registration undergraduate nursing students at a University in the North of England participated in this study. 90.7% were female. There were 198 (47.1%) year 1, 188 (44.7%), year 2, and 34 (8.2%), year 3 students. Their ages

ranged from 18 to 54 (M=29, S.D = 8.3) and 62% were White British, 8.4% Asian British, 21.9% African, and 1.2% Mixed Race.

Ethics/Procedure

Ethical permission was given by The School of Education and Psychology Ethics Committee at the University in line with the British Psychological Society's guidelines for human research (BPS, 2018). Participants were asked to complete the questionnaire at different phases of the scale's development during lectures. They were given a brief overview of the study and informed that taking part was voluntary and that they could withdraw at any time without consequence.

Phase 1: Item development

Items for the compassion strength indicators were empirically generated in the following ways. The initial indicators and items were developed *a priori* from a previous systematic review and qualitative study to develop the Compassion Strengths Model (Durkin et al., 2019, 2018). These were:

1. Self-Care
2. Character
3. Empathy
4. Connection
5. Interpersonal
6. Engagement
7. Competence
8. Communication

(Durkin et al., 2019)

Care was given when labelling items to reflect participants' experiences of compassion in the focus groups and interviews, but also to assess the frequency of reported behaviours. In addition, because of their association with each strength, the Connor-Davidson Resilience Scale (CD-RISC -10) (Connor & Davidson, 2003), and the Self-Compassion Scale (Neff, 2003) helped generate additional items for the self-care subscale. Furthermore, The Work and Meaning Inventory (WAMI) (Steger, 2012), plus items from the Compassion Satisfaction subscale of the Professional Quality of Life Scale (ProQOL) (Stamm, 2011) were used to create the Engagement subscale. The Human Connection Scale (Mack et al, 2009) was used to source items for the connection subscale. Finally, a measure of nurse's competence across Europe

(Cowan et al., 2007) informed several items on the competence subscale. To prevent respondents recognising which of the items were measuring a subscale, items were added randomly.

To establish the content validity of the compassion strengths indicators a team of Psychology and Nursing experts analysed the remaining items independently, making suggestions for which items to retain or remove. The response format for the BCSI was developed using a 6 item Likert type scoring scale. Reponses ranged from 1 Definitely not like me, 2 Generally not like me, 3 Slightly not like me, 4 Slightly like me, 5 Generally like me, to 6 Definitely like me.

Phase2: Scale development

Endorsement frequency

Endorsement frequency examines the item distribution and indicates the popularity of that item (Streiner et al., 2015). High scoring items of more than 90% or 95% in either direction should be excluded from the scale (Streiner, 1993). Reasons being that, unbalanced or highly skewed items provide little information, are more likely to correlate weakly with other items and the scale overall. However, in certain populations high endorsement rates can be expected and, in such cases, it is useful to retain these items (Clark & Watson, 1995). Items with endorsement rates between 0.2 and 0.80 are considered acceptable (Streiner et al., 2015).

Item discrimination

Item discrimination analysis was conducted to differentiate between high and low responders of the scale items using the Item Discrimination Index. This was achieved by subtracting the high scoring group (Ui) on an item with the low scoring group (Li), then dividing them by the total number of people in both groups (ni), expressed below in the index formula (Streiner et al, 2015).

$$di = \frac{Ui - Li}{ni},$$

Based on the Item Discrimination Index formula and the following guidelines, items were evaluated on their discrimination indices (Ebel & Frisbie, 1991). A higher discrimination index indicates that the item discriminates better between high and low tests scorers (Mitra et al, 2009; Zubairi & Kassim, 2016), see table 2.

Table 2. Guidelines for item discrimination evaluation (Ebel & Frisbie, 1991)

Index of Discrimination	Item Evaluation
0.40 and above	Very good items
0.30 to 0.39	Reasonably good but still subject to improvement
0.20 to 0.29	Marginal items need improvement
Below 0.19	Poor item that needs revising or rejected completely

Phase 3. Scale evaluation

Dimensionality

Confirmatory factor analysis is a form of psychometric assessment that allows for the systematic comparison of an *a priori* factor structure that estimates relationships between latent constructs (Boateng et al., 2018). The χ^2/df ratio, root mean square error of approximation (RMSEA) and two-sided 90% confidence intervals, the comparative fit index (CFI), and Tucker-Lewis index (TLI) were used to evaluate the goodness of fit for each model (Kline, 2005). A model was considered acceptable if the χ^2/df was < 4, CFI and TLI values were greater than 0.90, and the RMSEA was between 0.00 and 0.06 with confidence intervals between 0.00 and 0.08 (Hu & Bentler, 1999).

Reliability

Cronbach's alpha (1951) is used to assess a scale's internal consistency. A scale's internal consistency is dependent on the degree to which all items measure the same attribute or construct being measured (Connelly, 2011; Streiner, 1993; Streiner, 2003). Correlations measure the difference between items on the scale in that scores on one item will predict corresponding scores on similar items (Connelly, 2011). Scores range from 0.00 to 1.00 (Cronbach, 1951). It is suggested that researchers should avoid scores below 0.70, as they indicate that items might not be measuring the same thing. Scores of 0.70-0.80 are regarded as satisfactory, and 0.90 and above as high (Connelly, 2011; Streiner, 1993).

Test-retest reliability

Test-retest reliability measures the consistency of scores on a scale over time. A scale with strong reliability should have stable scores over a consistent period, and thus provide a true reflection of the individual attributes being measured. The values for test-retest reliability coefficients are considered marginal at 0.60, acceptable at 0.70, and high at 0.80 or above (Streiner, 1993). Streiner also suggests that a time period beyond two weeks between the initial test and the retest reduces the chance of

recalling previous answers. A shorter period of around one week for longer scales is recommended, as participants may struggle to remember responses from scales with 100 items. As the scale had 80 items, the time between test and retest was one week.

Construct validity

Concurrent correlational validity is concerned with the relationship between measures that are theoretically similar, while discriminant validity looks at the absence of correlation between them. It is recommended that correlations should not be as high as 0.70, as they would effectively be measuring the exact same construct, or below 0.30 to not show any relationship at all (Streiner et al., 2015). To establish convergent and discriminate validity, the Compassion Strengths Indicators were assessed by calculating Pearson's correlations with measures of compassion satisfaction, secondary traumatic stress (compassion fatigue), burnout empathy, and wellbeing.

Predictive validity

Multiple regression can be used to determine if scores on the scale can predict future outcomes. Greater predictability is concluded by strong and significant associations between predictor and criterion variables.

Measures

Professional Quality of Life (ProQOL) Scale (Stamm, 2009)

The ProQOL Scale consists of 30-items that quantify positive and negative facets of working with trauma. The scale has 3 subscales of compassion satisfaction, compassion fatigue/secondary traumatic stress, and burnout. Responses relate to the preceding 30 days, with the participant responding to items ranging from 1 (never) to 5 (very often). An example question is; "I feel connected to others".

Toronto Empathy Questionnaire (Spreng et al, 2009)

The Toronto Empathy Questionnaire is a 16-item scale consisting of 8 positively worded and 8 negatively worded items. An example includes "*I enjoy making other people feel better*". Responders are asked to rate themselves on a scale rating from 0 "rarely" to 4 "always".

Short Warwick and Edinburgh Mental Well-being Scale (sWEMWBS) (Tennant et al, 2009)

The *sWEMWBS* is a short version of the original 14-item *WEMWBS*, which consists of 7-items that measure perceptions of wellbeing over the previous fortnight. An example question is; *I've been feeling optimistic about the future*. Participants respond on a Likert scale ranging from 1 (none of the time) to 5 (all of the time).

Results

Content validity

Based on the panel's decision, 148 items were deemed unsuitable and excluded from the initial pool, leaving 192 items.

Endorsement frequency

After examining for endorsement frequency, 93 items were removed, leaving 89 overall from the original pool. All items ranged in the acceptable criteria of below 90% and 95%, or less than 5 % set out by Streiner (1993).

Item discrimination

When analysed for item discrimination, certain items from the endorsement frequency stage also fell into the reasonable and marginal categories. So that an equal number of items could be achieved for each subscale, these items were purposefully left in the pool. This is to include specific items that are expected of certain populations (Clark & Watson, 1995). However, item discrimination for the competence subscale identified several items that performed poorly and were subsequently removed, leaving a pool of 80 items (10 per subscale).

Dimensionality

Confirmatory Factor Analysis using maximum likelihood estimation for overall model fit was performed in Amos (v.23). A final 48 item scale was attained that included 6 items per factor. The χ^2/df was below 4. Goodness of fit indices indicated that the model had marginal values of TLI .791, CFI .810. The RMSEA value was .047, 90% [CI .044-.051], and SRMR .061 showing good model fit. Although RMSEA and SRMR

were acceptable, values lower than .90 for TLI and CFI suggest a need to re-specify the model with post-hoc fitting (Hu & Bentler, 1999). Further examination of the modification indices did not reveal any possible model changes that could be theoretically justified.

Realising that the unidimensional model might have affected the results, further strategies were explored. Using maximum likelihood estimation, CFA was carried out on each of the compassion strength indicators separately to investigate for unidimensional model fit. This revealed eight individual indicators of compassion strengths that were theoretically and statistically valid. Modification indices suggested adding error covariance between several items. In line with recommended research, this was limited to those that were theoretically justifiable and shared similarities in style or content (Hermida, 2015). All had exceptionally well-fitting models as indicated below. This provides further support for the validity of the BCSIs, as shown in table 3.

Table 3. Model fit for overall and each separate compassion strength indicator

Model	No. of items	χ^2/df	P value	TLI	CFI	RMSEA	90% CI	SRMR
(1) Overall	48	1.79	.001	.791	.810	.047	.047-.044	.061
(2) Character	6	.92	.824	1.032	1.000	.000	.00 -.07	.023
(3) Self-care	6	.54	.491	1.000	1.000	.000	.00-.04	.029
(4) Connection	6	1.23	.274	.990	.995	.033	.00 -.09	.035
(5) Interpersonal	6	1.46	.155	.979	.997	.046	.00 -.09	.035
(6) Engagement	6	.45	.840	1.044	1.000	.000	.00 -.05	.019
(7) Competence	6	1.70	.082	.969	.982	.057	.00 -.10	.034
(8) Communication	6	1.47	.183	.937	.975	.047	.00 -.10	.039
(9) Empathy	6	1.65	.094	.965	.979	.055	.00 -.10	.035

Note: χ^2/df = Chi-square/Degree of freedom, TLI = Tucker – Lewis index, CFI = Comparative fit index, RMSEA = Root mean square error of approximation, CI= Confidence interval, SRMR = Standardised root mean square residual.

Table 4. Example of two factors and their loadings on the BCSIs

Factor	Factor loading
Self-care (6 items)	
I believe in myself no matter what	.91
I feel in control of my life	.45
When I'm feeling burned out I sooth myself with comforting words	.36
I am confident about the future	.42
My life experiences have prepared me to deal with whatever comes my way	.37
When there are no clear solutions to my problems sometimes fate or God can help	.40
Connection (6 items)	
I enjoy speaking to patients and finding out how they are doing	.81
Respecting the patient is just as important as the care they receive	.39
I feel I am approachable to patients	.43
I take time out to listen to patients' concerns	.95
I do not see each patient as a whole person	.32
I pay close attention to what my patients are saying	.54

Reliability

The scale was assessed for reliability using Cronbach's alpha. Cronbach's alpha ranged from 0.55 to 0.85 suggesting that the subscales and overall scale internal reliability were acceptable (Connelly, 2011; Streiner, 1993), as shown in table 5.

Table 5. Descriptive statistics, Cronbach Alpha Coefficients and test-retest results for the 8 indicators and total score for the BCSIs.

Indicator	No. of items	M	SD	Minimum	Maximum	Cronbach's alpha (α)	Test-Retest
Self-care	6	26.1	5.1	8	36	0.67	0.87
Character	6	33.7	2.6	14	36	0.68	0.81
Empathy	6	33.4	3.1	14	36	0.78	0.78
Connection	6	34.1	3.1	16	36	0.74	0.54
Interpersonal	6	31.2	3.1	10	36	0.78	0.67
Engagement	6	32.4	3.1	14	36	0.64	0.79
Competence	6	30.0	4.8	6	36	0.80	0.60
Communication	6	32.0	3.0	19	36	0.55	0.66
Total	48	253.2	21.5	130	288	0.85	0.86

The test-retest reliability coefficient for total compassion strengths (0.86), self-care (0.87) and character (0.81) subscales were all high. Empathy (0.78) and engagement (0.79) were in the acceptable range, while interpersonal (0.67), communication (0.66), competence (0.60), marginal. Connection was the only poor performing subscale (0.54). While “on the cusp”, it was considered acceptable.

Concurrent correlational and discriminate validity

The total score for the compassion strengths indicators correlated positively with the compassion satisfaction subscale (r=.64), the total scores for wellbeing (r=.33), and empathy (r=.45). All the compassion strengths indicators showed a negative correlation with the burnout (r=-.34) subscale. Although there was a negative relationship between compassion strengths scores and secondary traumatic stress this was not significant, as shown in table 6.

Table 6. Convergent/discriminant validity of the BCSIs

	ProQOL-CS	ProQOL-STS	ProQOL-Burnout	TEQ	sWEMWS
CompStrengths	.638**	-.102	-.343**	.453**	.339**
Self-care	.267**	.004	-.449**	.133	.560**
Character	.559**	-.188**	-.233**	.388**	.229**
Empathy	.491**	-.050	-.201**	.419**	.276**
Connection	.249**	-.041	-.023	.150*	.073
Interpersonal	.517**	-.113	-.213**	.361**	.139*
Engagement	.610**	.051	-.244**	.431**	189**
Competence	.529**	-.128	-.206**	.348**	.196**
Communication	.430**	-.186**	-.192**	.384**	.224**

**p=<.001, *p=<.010 (two-tailed)

Predictive validity

A backwards linear regression analysis was conducted on individual and overall compassion strengths. The model predicted 87% of the variance (R^2 =. 87) and was significant, F (8, 218) = 173.518, p= .001. Based on the *B* weights (.256), results indicated that self-care was the best predictor of compassion strengths.

Further tests between these factors and similar measures were conducted. The compassion strengths model predicted 46% of the variance for compassion

satisfaction, F (3, 183) = 52.977, p=.001. Based on Beta weights total compassion strengths were the best predictor of compassion satisfaction, followed by engagement (positive) and connection (negative). Compassion strengths predicted 24.6% of the variance for burnout with self-care the strongest negative predictor, followed by interpersonal skills. Compassion strengths predicted 7.9% of the variance for STS with character the best predictor (negative) and engagement (positive).

Compassion strengths predicted 33% of the variance for wellbeing F (2, 198) = 48.193, p=.001, with self-care the best predictor, followed by communication.

Discussion

Scales aimed at measuring compassion are limited in nursing. The purpose of this study was to develop and validate a scale that could be used to measure nurses' compassion. The Bolton Compassion Strengths Indicators (BSIs) were designed to identify the indicators of compassion in nursing based on previous research with the Compassion Strengths Model (Durkin et al., 2019). The scale demonstrates good psychometric properties. Confirmatory factor analysis was applied to test the construct validity of the BCSIs and supported the *a priori* eight factor strengths model. The results of the modification indices were moderately acceptable for the scale overall, and excellent for each indicator, thus confirming the factor structure of the BCSIs. It seems that the compassion strengths are underlying factors of compassion, rather than overarching. This supports the Compassion Strengths Model (Durkin et al., 2019), and demonstrates the indicators of nurses' compassion felt missing with other scales (Griffiths et al., 2009). The BCSIs substantiate previous research into measures for compassion that identified similar themes, such as empathy, competence, connection and communication (Papadopoulos & Ali, 2016). They also add a different dimension to the literature, where alterative non-psychometric methods are used to measure compassion (Dewar, 2011), with a set of empirically supported indicators. A strength of the BCSIs are that they acknowledge the complexity of compassion and reflect the individual factors that influence someone's ability to provide compassionate care (Tierney et al, 2016).

The correlation between the BCSIs and compassion satisfaction suggest that they are similar but not to the point of overlapping into redundancy (Streiner & Kottner, 2014). Both scales share items that refer to the satisfaction that professionals feel when being compassionate. In a previous study with nursing students, compassion satisfaction was shown to correlate significantly with other general measures of compassion (Durkin et al., 2016). This suggests that the BCSI has factors associated with the

satisfaction derived from being compassionate. Total compassion strengths and engagement scores positively predicted greater compassion satisfaction, while connection was negative. This suggest that when all strengths are utilised nursing students report higher compassion satisfaction. A similar pattern was observed with reports of engaging in activities above and beyond regular nursing duties. These factors could also relate to compassion satisfaction, given that compassion is considered a positive nursing attribute (Von Diets & Orb, 2000).

The total BCSI score correlated negatively with the burnout subscale suggesting that higher compassion is related to lower burnout. At first, this seemed counterintuitive, as nursing students with high compassion are more likely to develop burnout and compassion fatigue (Maben et al., 2010; Bjerknes and Bjork, 2012). However, contrary to this belief it has been suggested that compassion may act as a psychological buffer to stressful situations (Cosley et al., 2010). This suggests that nursing students with strong compassion may suffer less from feelings of burnout. The self-care and interpersonal subscales predicted reduced burnout scores. Showing compassion to the self as well as others may also counteract students judging themselves harshly, and help build more resilient practitioners (Durkin et al., 2016). Equally, discussing and sharing clinical concerns with colleagues and patients helped reduce burnout. A major finding was that self-care was the best predictor of overall compassion strengths and low burnout scores. This provides some tentative evidence in support of previous research exploring the link between self-care and compassion in nursing (Mills et al., 2015, 2018).

The non-significant relationship between secondary traumatic stress (STS)/compassion fatigue and the BCSIs, is consistent with other studies using similar healthcare student samples (Durkin et al, 2016), or perform well psychometrically with nursing populations (Hemsworth et al., 2018). However, character did predict a reduction in scores for STS, while engagement predicted an increase. This could be explained by the positive character of nursing students when faced with situations that affect their compassion, and highlight the damaging effect wanting do more to help patients can have on nursing students.

The short Warwick and Edinburgh Mental Wellbeing Scale (sWEMWBS) was also found to be positively correlated with the BCSIs. This suggests that nurses who score higher on compassion strengths may report greater overall mental wellbeing. The sWEMWBS asks individuals to report how they have been feeling over the last two weeks. Items include questions about “feeling connected to others”, “feeling useful”, “optimistic” and being “better able to deal with problems” (Tennant et al., 2007). The BCSIs are composed of items related to connection, character and self-care, so it was expected that there would be a positive correlation between the two. The difference

with the BCSIs being that questions are more specific to building connections with patients and self-resilience. This shows that the BCSIs contains elements of wellbeing that are associated with nursing practice. Self-care also predicted higher wellbeing scores in this sample. This further supports self-care to help nursing students' measure and improve their wellbeing. Communication was also a significant predictor, indicating that talking and listening to patients can positively influence nursing students' wellbeing.

The BCSIs were significantly correlated with the Toronto Empathy Questionnaire (TEQ). Engagement was also the strongest predictor of TEQ, followed by empathy and communication. Being able to feel or understand what others are going through is important when attempting to help them. In nursing, empathy is a way of connecting with patients and their families to alleviate their suffering and assist them in a caring way (Senyuva et al., 2014). Empathy and compassion are often thought of as very similar constructs and are sometimes used interchangeably in the literature. However, compassion differs considerably as it involves the act of alleviating suffering as opposed to simply being in tune with the inner world and feelings of another person (Sinclair et al., 2018). The TEQ contains questions about sympathy and pity in addition to asking about feeling the urge to help someone who is upset. It also includes questions about being in-tune with others and making people feel better. These items also relate to questions in areas such as connection, communication and empathy on the BCSIs. For nurses to exercise compassion, it is expected that they would first have to empathise with patients. Empathy allows nurses to see things from the patient's perspective. In doing so, nurses create a deeper sense of connection by putting themselves in the place of the patient, and feeling motivated to assist them (Van der Cingel, 2011). However, connection also predicted reduced empathy which could indicate that in some cases connecting to the patient reduced nursing student's empathy. This could be influenced by several factors both personal and professional not explained in this study. Overall, these results suggest that the BCSIs performed as expected in line with the theoretical assumptions related to compassion in nursing.

Limitations

The overall BCSIs did not quite meet all the criteria for confirmatory factor analysis. A larger sample size may help improve criteria outcomes for these indices. Furthermore, the BCSI was developed on one sample of pre-registered nursing students studying at one university in the UK. Therefore, an additional limitation is that it was not tested with post-registered nurses, or larger international populations. While it can be argued that a 48 items scale is too long, it does capture the intricacies of the factors associated with compassion in nursing that other similar scales did not.

Implications

While the 48-item scale is suggested, we recommend utilising together the battery of eight short 6 item scales. The eight strengths are associated with compassionate nursing practice in the areas of empathy, connection, self-care, communication, interpersonal skills, competence, engagement, and character. In support of the psychological factors associated with compassion, this scale also includes items that reflected motivation to alleviate patient suffering (Goetz et al., 2010).

A lack of standardised measures for compassion in nursing, results in staff and patients relying on other interpretations of compassionate behaviour (Tierney et al, 2016). The eight BCS indicators highlight the comprehensive and multidimensional nature of compassion. This can be helpful for pre and post-registered nurses who wish to develop and understand their compassion strengths (Davidson & Williams, 2009). Indeed, this would also serve other researchers and educators who wish to study compassion strengths and how they develop over time, especially in stressful situations. The BCSIs could empower nursing students as they develop their professional and compassionate identity. To support the instrument's validity, further research should make use of these findings with broader and larger global samples and post-registration nurses. It could be used for pre and post assessment of participants for an educational intervention for compassion. Nurses and nursing students can use the scale as a self-development tool to assess and build their compassion strengths. It has possible use in nursing programmes as (a) an aid for recruitment and selection, and (b), a way of gauging the learning needs of students. A lower limit was not considered as we wanted this scale to reflect areas where more support/training/education was needed to build on each strength, rather than consider compassion as something that someone has or does not. As compassion is multifaceted, individuals will have strengths in different areas. It is not designed for use as a tool to refuse students entry onto nursing programmes. The aim is to help students and educators identify areas for development and work to address them. For example, if a nurse was low on self-care, then looking at ways to develop this. It could be used in pre and post evaluation research on interventions such as Mindfulness Self-Compassion, and/or Compassionate Mind Training. Whilst developed with nursing students it could be used with other healthcare students and professionals, by adjusting the term 'nurse' to the desired profession. Further investigation into this is strongly recommended.

Conclusion

The literature on compassion is rich in theory and commentary but little has been done on the measurement of compassion and how to change it. Griffiths et al (2008) highlight the need for a set of indicators to measure nursing care that include compassion. This study has not only provided a set of empirically based indicators for

compassion, but a validated and reliable measure so that individuals can measure their own compassion. The Bolton Compassion Strengths Indicators are a set of relatively short, reliable and valid instruments for the measurement of nursing students' compassion strengths. In these times of added pressure across the world's healthcare providers, where compassion and self-care are as important as ever, having the means to measure these fundamental strengths could aid in the development of future compassionate practitioners.

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Bolton
Compassion Strengths Indicators (BCSIs)

The purpose of this scale is to help you identify and develop your compassionate strengths. Please read the following set of statements *carefully*. Using the scoring guide score each statement with the number that *honestly* reflects your experience as a nurse/nursing student. There are no trick questions, nor is this a test. Please make sure that you answer all of the statements on all sides of the form.

	Statements	Definitely not like me	Generally not like me	Slightly not like me	Slightly like me	Generally like me	Definitely like me
1	I evaluate care effectively	1	2	3	4	5	6
2	I encourage caregivers to be supportive	1	2	3	4	5	6
3	I am aware of whether or not a patient's interpretation of something is the same as mine	1	2	3	4	5	6
4	I am gentle in my approach to patients	1	2	3	4	5	6
5	I explain symptoms and what they mean to help alleviate any worries patients may have	1	2	3	4	5	6
6	Honesty is an important quality for a *nurse* to have	1	2	3	4	5	6
7	I try to be as open as possible with patients	1	2	3	4	5	6
8	I develop a shared decision when making a treatment plan	1	2	3	4	5	6
9	I like to make small talk with patients at every opportunity	1	2	3	4	5	6
10	I often take time out to ask patients about the state of their health	1	2	3	4	5	6
11	I listen to the complete message before making a judgment about the speaker	1	2	3	4	5	6
12	Listening helps me understand the speaker's intentions	1	2	3	4	5	6
13	Where appropriate, I adapt my *nursing* practice to meet unpredictable circumstances	1	2	3	4	5	6
14	I stick to my promises when I agree to help patients	1	2	3	4	5	6
15	I believe in myself no matter what	1	2	3	4	5	6
16	I carry out an effective discharge plan	1	2	3	4	5	6
17	I feel in control of my life	1	2	3	4	5	6
18	When patients start talking I do not interrupt them	1	2	3	4	5	6
19	I find people to be the most interesting thing in life	1	2	3	4	5	6
20	When I'm feeling burned out I sooth myself with comforting words	1	2	3	4	5	6
21	I prepare patients appropriately for diagnostic procedures	1	2	3	4	5	6
22	Working with patients energises me	1	2	3	4	5	6
23	The ability to imagine myself in another's situation contributes to providing quality healthcare	1	2	3	4	5	6
24	I enjoy speaking to patients and finding out how they are doing	1	2	3	4	5	6

	Statements	Definitely not like me	Generally not like me	Slightly not like me	Slightly like me	Generally like me	Definitely like me
25	Respecting the patient is just as important as the care they receive	1	2	3	4	5	6
26	Patients would describe me as showing warmth	1	2	3	4	5	6
27	I am confident about the future	1	2	3	4	5	6
28	I believe that empathy is important for the therapeutic relationship between *nurse* and patient	1	2	3	4	5	6
29	My ability to understand how patients and their families are feeling helps me care for them	1	2	3	4	5	6
30	Trust is an important part of the caring relationship	1	2	3	4	5	6
31	I am able to accurately assess the effectiveness of preventative health advice to meet the patients' needs	1	2	3	4	5	6
32	I can make my patients feel better when I understand their feelings	1	2	3	4	5	6
33	Despite the challenges I gain pleasure from caring for patients	1	2	3	4	5	6
34	I have respect for my patients needs	1	2	3	4	5	6
35	I provide relevant and current health information to patients in a way that they understand and which gives them the option to choose	1	2	3	4	5	6
36	I feel I am approachable to patients	1	2	3	4	5	6
37	I believe that the ability to view things from the patient's perspective can lead to better care	1	2	3	4	5	6
38	I listen to what others have to say when they are talking	1	2	3	4	5	6
39	My life experiences have prepared me to deal with whatever comes my way	1	2	3	4	5	6
40	When there are no clear solutions to my problems sometimes fate or God can help	1	2	3	4	5	6
41	I take time out to listen to patients' concerns	1	2	3	4	5	6
42	I think that the best way to take care of a patient is to try and understand what they are going through	1	2	3	4	5	6
43	I do not see each patient as a whole person	1	2	3	4	5	6
44	I ask patients to discuss any matters about their stay in hospital	1	2	3	4	5	6
45	I feel a sense of joy from meeting new people and finding out more about them	1	2	3	4	5	6
46	Being a nurse serves a greater purpose	1	2	3	4	5	6
47	I pay close attention to what my patients are saying	1	2	3	4	5	6
48	I ask patients if they have any problems following what the doctor has recommended	1	2	3	4	5	6

Bolton Compassion Strength Indicators (BCSIs)

Scoring key:–

Competence = 1, 13, 16, 21, 31, 35

Interpersonal skills = 2, 5, 8, 10, 44, 48

Communication = 3, 9, 11, 12, 18, 38

Engagement = 4, 19, 22, 33, 45, 46

Character = 6, 7, 14, 25, 26, 30

Self-care = 15, 17, 20, 27, 39, 40

Connection = 24, 34, 36, 41, **(43)**, 47

Empathy = 23, 28, 29, 32, 37, 42

Individual compassion strength scores are computed by adding the responses for each item. A total compassion strengths score is achieved by adding the total score from each individual strength together. Please note that item 43 is reversed scored.